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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* WOO SIK KIM and YOENG KI KIM

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Appeal 2007-3367  
Application 10/023,745  
Technology Center 2600

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Decided: March 18, 2008

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Before ROBERT E. NAPPI, MARC S. HOFF, and KARL D. EASTHOM,  
*Administrative Patent Judges.*

NAPPI, *Administrative Patent Judge.*

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 6(b) of the final rejection of claims 1 through 19, 21, 26, 28 through 38, and 40 through 42.

We affirm in part.

INVENTION

The invention is directed to a communications system including a base station which outputs a digital in phase and quadrature phase signal. The signal is

input to an optical connecting unit which converts the signal into an optical signal that is transmitted to an optical base station via an optical cable. The optical base station converts the received signal to a digital in phase and quadrature phase signal for radio frequency transmission. See page 9 of Appellants' Specification. Claim 1 is representative of the invention and reproduced below:

1. A communications system, comprising:  
a base station configured to output first digital in phase and quadrature phase (I/Q) signals;  
an optical connecting unit configured to convert the first digital I/Q signals into optical signals and output the converted optical signals through an optical cable; and  
an optical base station coupled to receive the optical signals through the optical cable and configured to convert the optical signals into second digital I/Q signals, and convert the second digital I/Q signals into first RF signals for transmission.

#### REFERENCES

Russell	US 5,627,879	May 6, 1997
Gordon	US 5,067,173	Nov. 19, 1991

#### REJECTIONS AT ISSUE

Claims 1, 2, 6 though 8, 10 through 19, 21, 26, 28 through 38, and 40 through 42 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Russell. The Examiner's rejection is set forth on pages 3 through 13 of the Answer.

Claims 3 through 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Russell in view of Gordon. The Examiner's rejection is set forth on pages 13 and 14 of the Answer.

Claim 9 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Russell. The Examiner's rejection is set forth on pages 14 and 15 of the Answer.

Throughout the opinion, we make reference to the Brief (received May 23, 2006), Reply Brief (received October 10, 2006) and the Answer (mailed August 10, 2006) for the respective details thereof.

### ISSUES

#### *Rejection of Independent claims 1, 11, 18, 26, 31, and 33.*

Appellants contend on pages 9 through 11 of the Brief and pages 2 through 5 of the Reply Brief that the Examiner's rejection of claim 1 under 35 U.S.C. § 102(b) is in error. Appellants assert that the Examiner's finding that Russell's base station (item 330), head end unit (item 332), and AM modulator/demodulator (item 338) do not correspond to the claimed base station. Brief 9-10, Reply Brief 2-4. Rather, Appellants argue that Russell teaches a base station is just item 330 which outputs an RF signal and that Russell does not teach outputting a first digital signal in phase and quadrature as claimed. Brief 10-11. Further, Appellants argue the Examiner's interpretation of what constitutes the base station does not take into account the recited optical connecting unit. On pages 19, 20, 24 through 27, 30, and 32 of the Brief, Appellants present similar arguments directed to independent claims 11, 18, 26, 31, and 33.

Thus, Appellant's contentions directed to the Examiner's rejection of independent claims 1, 11, 18, 26, 31, and 33 present us with the issue of whether the Examiner erred in finding that Russell teaches a base station as claimed.

We note that in the Brief, Appellants made statements directed to the Examiner's rejection of each claim individually. We will address these statements *infra* in the analysis section.

#### FINDINGS OF FACT

1. Russell teaches a cellular communications system which includes base stations that communicate with remote antenna units via a fiber optic link. Abstract.
2. Russell teaches an embodiment that makes use of existing cable distribution lines to connect the base station to the remote units (optical nodes items 342 in figure 17). In this embodiment, the base station interfaces with a head end unit which distributes the cable information. One permutation of this embodiment has the base station (item 330) co-located with the head end unit, thus eliminating the optical cables and transmitters to link item 330 and the head end unit. Fig. 17 and col. 15, ll. 35-42. A further variation of this embodiment makes use of a QAM modulator (item 460) and optical transmitter (item 462) for transmission to the remote units, and an optical receiver (item 466) and QAM demodulator for receiving transmission from the remote units. Fig. 28, col. 17, ll. 18-41.
3. The optical nodes (item 342) communicate through RF antennas (items 516 and 520) with mobile units. The optical nodes have an optical receiver (item 500), a QAM demodulator (item 502) and a digital to analog converter to receive communication from the base station and pass it along to the mobile units via antenna 516. The optical nodes also make use of a duplexer so that antennas 516 and 520 provide diversity reception of signals from the mobile units. The signals from

the mobile units go through a digital to analog converter (item 534), QAM modulator (item 536) and optical transmitter (item 538) to communicate to the base station. Fig. 29, col. 17, l. 42- col. 18, l. 4.

## PRINCIPLES OF LAW

37 C.F.R. § 41.37 (c)(1)(vii) states:

For each ground of rejection applying to two or more claims, the claims may be argued separately or as a group. When multiple claims subject to the same ground of rejection are argued as a group by appellant, the Board may select a single claim from the group of claims that are argued together to decide the appeal with respect to the group of claims as to the ground of rejection on the basis of the selected claim alone. Notwithstanding any other provision of this paragraph, the failure of appellant to separately argue claims which appellant has grouped together shall constitute a waiver of any argument that the Board must consider the patentability of any grouped claim separately.... A statement which merely points out what a claim recites will not be considered an argument for separate patentability of the claim.

Office personnel must rely on Appellant's disclosure to properly determine the meaning of the terms used in the claims. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995). "[I]nterpreting what is *meant* by a word in a claim 'is not to be confused with adding an extraneous limitation appearing in the specification, which is improper.'" *In re Cruciferous Sprout Litigation*, 301 F.3d 1343, 1348 (Fed. Cir. 2002) (emphasis in original) (citing *Intervet Am., Inc. v. Kee-Vet Labs., Inc.*, 887 F.2d 1050, 1053 (Fed. Cir. 1989)).

## ANALYSIS

*Rejection under 35 U.S.C. § 102(b).*

*Independent claim 1.*

Appellants' arguments have not persuaded us that the Examiner erred in rejecting claim 1. Claim 1 recites: "a base station configured to output first digital in phase and quadrature phase (I/Q) signals," an optical connecting unit and an optical base station. Appellants, in their Briefs, have not proffered a definition of the term "base station," and neither Appellants' Specification nor Russell defines the term. However, Appellants' Specification identifies that a base station is a device with which mobile terminals communicate (Specification 1) or a device with which remote stations communicate. This is consistent with the usage of the term "base station" in Russell (see col. 1, ll. 32-35, and col. 2, ll. 40-55). Thus, we consider the scope of the term "base station" to include a station that communicates with a mobile or remote terminal.

We are not persuaded by Appellants' arguments, on pages 9 and 10 of the Brief, that the Examiner erred in finding that Russell's items 330, 332, and 338 form a base station that outputs I/Q signals. The Examiner has found on page 16 of the Answer that Russell teaches the base station (item 330) can be combined with the head end and that such an arrangement meets the claimed base station. We concur with the Examiner's findings. Russell teaches that the base station (item 330) can be co-located with the elements of the head end. Fact 2. We consider that co-locating these devices results in a device which has the claimed function of a base station. The device communicates with a plurality of remote units (optical nodes items 342). Further, the Examiner has found, Answer 3, and Appellants have not contested, that the QAM outputs of modulator 338 (which the Examiner considers to be part of the base station), meet the claimed digital in phase and quadrature phase signals. Thus, Appellants' arguments have not

persuaded us that the Examiner erred in finding that Russell's items 330, 332, and 338 form a base station that outputs I/Q signals.

Further, we are not persuaded by Appellants' arguments on page 5 of the Reply Brief that the Examiner's rejection is in error as the application of Russell as asserted, does not take into account the optical connecting unit. Claim 1 recites that there is an optical connecting unit, but does not limit where or how it is connected to the base unit. Thus, we consider the limitation broadly and to encompass the "AM Optical Transmitters" (items 340 A-B, of figure 28). Note these transmitters receive the QAM signal from the "QAM Modulators" (items 460, 464) (Fact 3) and as such we consider them to meet the limitation of an optical connecting unit configured to convert the first I/Q signals into optical signals.

For the foregoing reasons, Appellants' arguments have not persuaded us of error in the Examiner's rejection of claim 1, which we affirm.

*Independent claim 11.*

Appellants separately address independent claim 11 on pages 19 and 20 of the Brief. On page 19 of the Brief, Appellants present the same arguments as discussed with respect to claim 1. Further, on page 20 of the Brief, Appellants argue that Russell does not teach transmitting optical signals to an optical base station, as Appellants do not consider Russell's optical nodes (items 342) to be an optical base station.

These arguments have not persuaded of error in the Examiner's rejection. Neither Appellants' arguments nor Appellants' Specification provides a definition of the term "optical base station." However, Appellants' Specification, on page 2, discusses the optical base station as being in optical communication with the base



station and communication with mobile devices. Thus, we consider the scope of the term optical base station to include a station that communicates with a base station by an optical link and mobile terminal. As discussed *supra* with respect to claim 1, we find Russell to teach a base station which communicates via optical links to optical nodes. Fact 2. Russell teaches that these optical nodes communicate with mobile devices. Fact 3. Thus, we consider the optical nodes to meet the Appellants' claimed optical terminal as they communicate with a base station via optical link and with mobile units. As Appellants' arguments have not persuaded us of error in the Examiner's rejection of claim 11, we affirm the rejection of claim 11.

*Independent claim 18.*

Appellants separately address independent claim 18 on pages 24 and 25 of the Brief. On page 25 of the Brief, Appellants present the same arguments as discussed with respect to claim 1. Further, on page 18 of the Reply Brief, Appellants argue that claim 18 recites providing a second digital electronic signal from the optical coupling unit to the base station.

These arguments have not persuaded of error in the Examiner's rejection. As discussed *supra* with respect to claim 1, we find Russell to teach a base station which communicates via optical links to optical nodes.<sup>1</sup> Fact 2. As discussed *supra* with respect to claim 11, we find that the optical nodes meet the claimed optical base station as they communicate with remote units and the base station. Fact 3. We consider the claimed steps of the remote base station receiving the RF

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<sup>1</sup> We note that claim 18 differs in scope from claim 1, in that claim 18 does not require the base station to be configured to output first digital in phase and quadrature phase (I/Q) signals. Thus, for claim 18 we consider items 332 and 330 to meet the claimed base station.

signal, converting the RF signal to a digital signal and transmitting the optical signal to be taught by the operation of the optical node's elements A/D converter (item 534), QAM modulator (item 536) and optical transmitter (item 538). Fact 3. Further, as discussed *supra* with respect to claim 1, the communication from the optical node is received by the optical receiver (item 466, figure 28) which meets the claimed optical connecting unit. The optical receiver and the QAM demodulator together convert the optical signal to a digital QAM signal, which is provided to the base station.<sup>2</sup> Fact 2. Thus, Appellants' arguments have not persuaded us that the Examiner erred in finding that Russell teaches the claimed base station and providing a second digital electronic signal from the optical coupling unit to the base station. Accordingly, we affirm the Examiner's rejection of claim 18.

*Independent claim 26.*

Appellants separately address independent claim 26 on pages 26 and 27 of the Brief. On page 26 of the Brief, Appellants present the same arguments, that Russell does not teach a base station, as discussed with respect to claim 1. Further, on page 27 of the Brief, Appellants present the same arguments, that Russell does not teach a remote base station, as discussed with respect to claim 11.

As discussed *supra*, we do not find these arguments persuasive of error in the Examiner's rejection. As discussed with respect to claims 1 and 11, we consider the scope of the term "base station" to include a station that communicates with a mobile or remote terminal. The Examiner has found that the optical nodes of Russell meet the claimed remote base station. Answer 9. As addressed *supra*, Appellants' arguments have not persuaded us of error in the

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<sup>2</sup> See note 1.

Examiner findings. Further, as Appellants' statements directed to the rejection of independent claim 26 have not identified any additional basis of error in the Examiner's rejection, we affirm the Examiner's rejection of claim 26 for the reasons discussed *supra* with respect to claims 1 and 11.

*Independent claims 31 and 33.*

Appellants' separately address independent claim 31 on page 30 of the Brief, and separately address independent claim 33 on page 32 of the Brief. Appellants present the same arguments (i.e., that Russell does not teach a remote base station) as discussed with respect to claim 26.

As discussed *supra*, we do not find this argument persuasive of error in the Examiner's rejection. Accordingly, we affirm the Examiner's rejection of claims 31 and 33 for the reasons discussed *supra* with respect to claim 26.

*Dependent claims rejected under 35 U.S.C. § 102(b)*

*Dependent claim 2.*

On page 11 of the Brief, Appellants state that claim 2 is dependent upon claim 1 and the Examiner's rejection of claim 2 is in error for the reasons discussed with respect to claim 1. Further, on page 12 of the Brief, Appellants recite limitations of claim 2 and state that they are not present in the figures of Russell.

We do not consider these statements to be a separate argument under 37 C.F.R. § 41.37 (c)(1)(vii), but rather a "statement which merely points out what a claim recites" and as such group claim 2 with claim 1. Further, inasmuch as Appellants' statements, on page 12 of the Brief, are intended to argue that the optical node in Russell's figure 29 is not an optical base station as recited in claim 2, we are not persuaded of error in the Examiner's rejection. As discussed *supra*

with respect to claim 11, we find that Russell's optical node is an optical base station. Accordingly, we affirm the Examiner's rejection of claim 2.

*Dependent claims 12 and 17.*

On page 20 of the Brief, Appellants state that claim 12 is dependent upon claim 11 and the Examiner's rejection of claim 12 is in error for the reasons discussed with respect to claim 11. Further, on pages 20 and 21 of the Brief, Appellants recite limitations of claim 12 and state that they are not present in the figures of Russell. On pages 23, and 24 of the Brief, Appellants make similar statements directed to claim 17.

We do not consider these statements to be a separate argument under 37 C.F.R. § 41.37 (c)(1)(vii) and as such group claims 12 and 17 with claim 11. Further, inasmuch as Appellants' statements, on page 21 through 24 of the Brief, are intended to argue that the optical node in Russell's figure 29 is not an optical base station as recited in claims 12 and 17, we are not persuaded of error in the Examiner's rejection. As discussed *supra* with respect to claim 11, we find that Russell's optical node is an optical base station. Accordingly, we affirm the Examiner's rejection of claims 12 and 17.

*Dependent claims 14 and 15.*

Appellants argue on page 22 of the Brief that the rejection of claim 14 is in error. Appellants argue that the Examiner's finding that Russell's item 460 teaches the claimed multiplexing is in error, as item 460 does not convert signals received from a base station.

Appellants have persuaded us of error in the Examiner's rejection of claim 14. Dependent claim 14 further limits claim 11, stating that converting the digital

I/Q signals received from a base station into optical signals includes multiplexing. The Examiner finds on page 21 of the Answer that Russell teaches modulating signals in QAM item 460. As discussed *supra* with respect to claims 1 and 11, we consider the QAM modulator (item 460) to be part of the base station. Thus, we do not find that Russell teaches multiplexers that receive signals from a base station. Thus, Appellants' arguments have persuaded us of error in the Examiner's rejection of claim 14. Claim 15 is dependent upon claim 14. Accordingly, we reverse the Examiner's rejection of claims 14 and 15.

*Dependent claim 19.*

On pages 25 and 26 of the Brief, Appellants state that claim 19 is dependent upon claim 18 and the Examiner's rejection of claim 19 is in error for the reasons discussed with respect to claim 18. Further, Appellants re-state the limitations of claim 19.

We do not consider these statements to be a separate argument under 37 C.F.R. § 41.37 (c)(1)(vii) and as such group claim 19 with claim 18. Accordingly, we affirm the Examiner's rejection of claim 19 for the reasons discussed *supra* with respect to claim 18.

*Dependent claims 6, 16, 21, and 35.*

On page 15 of the Brief, Appellants state that claim 6 is dependent upon claim 2 and the Examiner's rejection of claim 6 is in error for the reasons discussed with respect to claim 2. Further, Appellants argue that Russell's diversity antenna, item 520, is not coupled to a duplexer. Appellants present similar arguments directed to claims 16, 21, and 35 on pages 23, 26, and 33 of the Brief.

The Examiner responds, on page 18 of the Answer, stating:

It is well understood in the communications art that "diversity" reception generally refers to the receiving of a same signal using more than one receiving antenna in order to more effectively receive the signal. Examiner notes that both Appellant's specification (see page 16, paragraph 52) and the disclosure of Russell et al. (see column 17, lines 57-62) use the term "diversity" in this way. Although Appellant refers to both antennas 116 and 118 in their Figure 6 as "diversity antennas," the antennas 516 and 520 disclosed by Russell et al. in Figure 29 are also both "diversity" antennas in the sense that they are jointly used for diversity reception. In other words, Russell et al. label antenna 516 as a "main antenna" and label the extra antenna 520 as a "diversity antenna," but it would be well recognized in the communications art that Russell et al. disclose diversity reception using both antennas. Therefore, it would also be well understood in the art that main antenna 516 is also a "diversity antenna" (i.e., an antenna which enables diversity reception since it receives part of the signal along with the other antenna 520).

Appellants' arguments have not persuaded us of error in the Examiner's rejection of claims 6, 16, 21, and 35. We concur with the Examiner's findings. We note that the antennas in Russell perform the same functions as in Appellants' Specification, that Appellants use a different name for the antennas is of no consequence. Accordingly, we affirm the Examiner's rejection of claims 6, 16, 21, and 35.

*Dependent claims 7, 8, and 37.*

Appellants argue on page 5 of the Reply Brief that the rejection of claim 7 is in error. Appellants argue that the Examiner's finding that Russell's items 330, 332, and 338 form a base station that outputs I/Q signals is in conflict with the Examiner's findings directed to specific features of the optical connecting unit in claim 7.

Appellants have persuaded us of error in the Examiner's rejection of claim 7 and the claims dependent thereupon. Claim 7 is dependent upon claim 1 and

further recites that the optical connecting unit comprises “a multiplexer/demultiplexer configured to multiplex the first I/Q signals.” The Examiner, on pages 5 and 6 of the Answer, equates the elements of the optical node (item 338, of figure 28) with the claimed optical connecting unit, and finds that the QAM modulator (item 460 of figure 28) meets the claimed multiplexer. However, as discussed *supra* with respect to our affirmation of claim 1, we consider the QAM modulators (items 460, 464, of fig. 28) to be part of the base station, and the AM optical transmitter (items 462, 466, of fig. 28) to be the optical connecting unit. Thus, we do not find that the Examiner has shown that Russell teaches all of the limitations of claim 7. Accordingly we reverse the Examiner’s rejection of claim 7 and the claims dependent thereupon, claims 8 and 37.

*Dependent claim 10.*

On page 18 of the Brief, Appellants state that claim 10 is dependent upon claim 1 and the Examiner’s rejection of claim 10 is in error for the reasons discussed with respect to claim 1.

We do not consider this to be a separate argument under 37 C.F.R. § 41.37 (c)(1)(vii) and as such group claim 10 with claim 1 and affirm the Examiner’s rejection of claim 10.

*Dependent claim 13.*

On page 21 of the Brief, Appellants state that claim 13 is dependent upon claim 12 and the Examiner’s rejection of claim 13 is in error for the reasons

discussed with respect to claim 12. Further, Appellants argue that Russell does not teach a synchronous signal.

The Examiner finds on pages 21 and 22 of the Answer that Russell teaches that the demultiplexing and multiplexing is performed using a synchronized clock. Appellants' arguments have not persuaded us of error in the Examiner's rejection of claim 13. Claim 13 recites "wherein demultiplexing is performed in accordance with a synchronous signal." Russell teaches the channel filters (item 936 of figure 44) in the remote units (item 904, of figures 42 and 44) receive a clock signal sent over the fiber link. Col. 30, ll. 24-28, 43-45, and 53-55. Further, Russell teaches that the local oscillators of the remote units are locked to master clock (i.e. they are synchronized to the master clock). Col. 31, ll. 3-19. Accordingly, we are not persuaded of error in the Examiner's rejection of claim 13.

*Dependent claims 38, 40, 41, and 42.*

Appellants argue on page 24 of the Brief that the rejection of claim 38 is in error. Appellants argue that claim 38 recites, converting a digital signal from parallel to serial, and that the portions of Russell cited by the Examiner do not teach that the optical base station has the ability to convert parallel to serial digital I/Q signals. Appellants present similar arguments directed to claims 40, 41, and 42 on pages 29, 31, and 34 of the Brief.

The Examiner states on page 22 of the Answer:

Russell et al. disclose converting the first digital I/Q signals from parallel to serial (column 8, lines 56-64). Specifically, Russell et al. disclose an embodiment of their system (Figures 2-4) wherein the signals carrying data to be transmitted are processed in a base station (including elements of base station 106, which includes digital transmitter/receiver unit 130 as shown in Figures 3 and 4). This base station is also connected to an optical connecting unit comprising an optical transmitter (laser 136) and optical receiver 140 as



shown in Figure 4 which connect the base station to the remote optical base stations (remote units 102 as shown in Figures 2-4). Russell et al. further disclose that the signals to be transmitted from the base station may be parallel and if so, they are converted from parallel to serial before being output from the optical transmitter to the remote units (column 8, lines 56-64).

Appellants' arguments have not persuaded us of error in the Examiner's rejection of claims 38, 40, 41, and 42. Russell discusses, referring to figure 4, that the frame multiplexer, item 134, converts a 24 bit wide parallel sample to a single serial bit stream. Col. 8, ll. 60-63. While this teaching is in the context of the frame/multiplexer associated with base station unit 130, we note that Russell also teaches that the frame/multiplexer (item 172, figure 8) associated with the remote units is substantially the same as the frame/multiplexer associated with the base station. Col. 11, ll. 37-40. Thus, we find ample evidence of record to support the Examiner's findings that Russell teaches an optical base station that has the ability to convert parallel to serial digital I/Q signals. Accordingly, we affirm the Examiner's rejection of claims 38, 40, 41, and 42.

*Dependent claims 28 and 30.*

On page 27 of the Brief, Appellants state that claim 28 is dependent upon claim 26 and the Examiner's rejection of claim 28 is in error for the reasons discussed with respect to claim 26. Further, on page 28 of the Brief, Appellants recite limitations of claim 28 and state that they are not present in the figures of Russell. On page 29 of the Brief, Appellants make similar statements directed to claim 30.

We do not consider these statements to be a separate argument under 37 C.F.R. § 41.37 (c)(1)(vii) and as such group claims 28 and 30 with claim 26. Accordingly, we affirm the Examiner's rejection of claims 28 and 30.

*Dependent claim 29.*

Appellants argue on page 28 of the Brief that the rejection of claim 29 is in error. Appellants argue that the Examiner's finding that Russell's item 460 meets the claimed multiplexing is in error, as item 460 does not convert signals received from a base station.

Appellants have persuaded us of error in the Examiner's rejection of claim 29. Dependent claim 29 further limits claim 26, stating that converting the digital I/Q signals received from a base station into optical signals includes multiplexing. The Examiner finds on page 21 of the Answer that Russell teaches modulating signals in QAM item 460. As discussed *supra*, with respect to claims 1 and 11, we consider the QAM modulator (item 460) to be part of the base station. Thus, we do not find that Russell teaches multiplexers that receive signals from a base station. Thus, Appellants' arguments have persuaded us of error in the Examiner's rejection of claim 29.

*Dependent claim 32.*

On page 30 of the Brief, Appellants state that claim 32 is dependent upon claim 31 and the Examiner's rejection of claim 32 is in error for the reasons discussed with respect to claim 31. Further, on page 31 of the Brief, Appellants recite limitations of claim 32 and state that the optical node of Russell is not a remote base station as claimed.

We do not consider these statements to be a separate argument under 37 C.F.R. § 41.37 (c)(1)(vii) and as such group claim 32 with claim 31. Further, as discussed *supra* with respect to claim 26, we find that Russell's optical node is a remote base station. Accordingly, we affirm the Examiner's rejection of claim 32.

*Dependent claim 34.*

On page 32 of the Brief, Appellants state that claim 34 is dependent upon claim 33 and the Examiner's rejection of claim 34 is in error for the reasons discussed with respect to claim 33. Further, on pages 32 and 33 of the Brief, Appellants recite limitations of claim 34 and state that the optical node of Russell is not a remote base station as claimed.

We do not consider these statements to be a separate argument under 37 C.F.R. § 41.37 (c)(1)(vii) and as such group claim 34 with claim 33. Accordingly, we affirm the Examiner's rejection of claim 34.

*Dependent claim 36.*

Appellants argue on pages 33 and 34 of the Brief that the rejection of claim 36 is in error. Appellants argue that the Examiner's finding that Russell's items 502 and 536 are features of a remote base station is in error.

Appellants have not persuaded us of error in the Examiner's rejection of claim 36. As discussed *supra*, with respect to claims 1 and 11, we consider the scope of the term "base station" to include a station that communicates with a mobile or remote terminal. The Examiner has found that the optical nodes of Russell meet the claimed remote base station. Answer 9. Russell depicts in figure 29, that QAM modulator (item 502) and QAM demodulator (item 536) are both

elements of optical node item 342. Thus, Appellants' arguments have not persuaded us of error in the Examiner's rejection of claim 36.

*Rejection of claims 3 through 5 under 35 U.S.C. § 103(a)*

Appellants argue on pages 12 and 13 of the Brief that claim 3 recites that the optical base station includes a plurality of duplexers and low noise amplifiers. Appellants argue that there is no teaching or suggestion in the references to make use of a plurality of duplexers and low noise amplifiers.

The Examiner finds on page 17 of the Answer that Russell teaches using one duplexer in an embodiment, shown in figure 29, where there are two antennas. Further, the Examiner finds that Russell teaches another embodiment, shown in figure 42, where there is a plurality of antennas. From these findings, the Examiner concludes that one skilled in the art would apply a plurality of duplexers for the plurality of antennas.

Appellants' arguments have persuaded us of error in the Examiner's rejection. Initially, we note that Russell teaches that the duplexer is used as part of the diversity feature where one antenna is used to both transmit and receive data. Col. 16, ll. 12-27. In the two alternate embodiments of implementing the figure 42 embodiment which makes use of a plurality of antennas for transmitting and receiving at different channels, there is a dedicated transmit antenna and receive antenna (see item 902a and 902b in figures 44 and 47). Thus, we do not find that there is a reason why the skilled artisan would use multiple duplexers in the embodiment figure 44, as the antennas are dedicated to transmission or reception. Accordingly, we reverse the Examiner's rejection of claim 3, as well as claims claims 4 and 5 dependent thereupon.

*Rejection of claim 9 under 35 U.S.C. § 103(a)*

Appellants argue on pages 17 and 18 of the Brief that claim 9 recites that the optical base connecting unit receives data signals from a channel card of the base station. Appellants argue that Russell presents no teaching or suggestion to make use of a channel card.

Appellants' arguments have not persuaded us of error in the Examiner's rejection. Appellants' Specification does not provide a description of a channel card. The Examiner interprets this limitation as including an element that transmits a signal (channel) and is mounted on a circuit board. The Examiner found on pages 15 and 19 of the Answer that channel cards were well known in the art at the time of the invention. The Appellants have not contested this finding of fact. As discussed *supra* with respect to claim 1, upon which claim 9 depends, we find that Russell teaches a base station which outputs I/Q signals. One skilled in the art would have recognized that there is a circuit in Russell's base station which generates these signals and that the circuit must be mounted on a circuit board. Thus, we find that using a channel card to output the I/Q signals from the base station of Russell to be nothing more than using known elements for their known purposes. Accordingly we affirm the Examiner's rejection of claim 9.

## CONCLUSION

We affirm the Examiner's rejections of claims 1, 2, 6, 10 through 13, 16 through 19, 21, 26, 28, 30 through 36, 38, and 40 through 42 under 35 U.S.C. § 102(b) and claim 9 under 35 U.S.C. § 103(a). We reverse the Examiner's rejections of claims 7, 8, 14, 15, 29, and 37 under 35 U.S.C. § 102(b), and 3 through 5 under 35 U.S.C. § 103(a). The decision of the Examiner is affirmed-in-part.

Appeal 2007-3367  
Application 10/023,745

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136 (a)(1)(iv).

AFFIRMED-IN-PART

tdl

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